

What is claimed is:

1. A method for increasing cerebral blood flow in a patient, comprising the steps of:
providing a transcutaneous electrical stimulating device;
applying the electrical stimulating device to the skin of the patient at a region
5 adjacent the cervical sympathetic chain; and
operating the electrical stimulating device to stimulate or inhibit nerve impulses
of the cervical sympathetic chain, thereby producing vasodilation in the cerebral vasculature,
thereby increasing cerebral blood flow.

2. The method of claim 1, further comprising the steps of measuring cerebral blood
10 flow before and after the step of operating the electrical stimulating device.

3. The method of claim 2, further comprising the step of determining the increase in
cerebral blood flow produced by operating the electrical stimulating device.

4. The method of claim 1, wherein the electrical stimulating device is applied to the
skin of the patient at a region adjacent the superior cervical ganglion.

15 5. The method of claim 1, wherein the electrical stimulating device is applied to the
skin of the patient at a region adjacent the stellate ganglion.

6. The method of claim 1, wherein the electrical stimulating device is applied to the
skin of the patient at a region 2 cm to the right of spinous processes of vertebral bodies C5-6.

7. The method of claim 1, wherein the electrical stimulating device is a GRASS
20 stimulator.

8. The method of claim 1, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a rectangular square pulse.

9. The method of claim 1, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a pulse of 1 msec duration, 50 Hz, and 10 volts, with a stimulus train duration of 20 msec.

10. The method of claim 1, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a pulse of 0.1-3 msec duration, 25-75 Hz, and 5-15 volts, with a stimulus train duration of 10-30 msec.

11. A method for increasing cerebral blood flow in a patient, comprising the steps of:
providing a transcutaneous electrical stimulating device;
applying the electrical stimulating device to the skin of the patient at a region adjacent the brain stem; and
operating the electrical stimulating device to stimulate or inhibit nerve impulses of the brain stem, thereby producing vasodilation in the cerebral vasculature, thereby increasing cerebral blood flow.

12. The method of claim 11, further comprising the steps of measuring cerebral blood flow before and after the step of operating the electrical stimulating device.

13. The method of claim 12, further comprising the step of determining the increase in cerebral blood flow produced by operating the electrical stimulating device.

14. The method of claim 11, wherein the electrical stimulating device is applied to the skin of the patient at a region adjacent the medulla.

15. The method of claim 11, wherein the electrical stimulating device is a GRASS stimulator.

16. The method of claim 11, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a rectangular square pulse.

17. The method of claim 11, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a pulse of 1 msec duration, 50 Hz, and 10 volts, with a stimulus train duration of 20 msec.

18. The method of claim 11, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a pulse of 0.1-3 msec duration, 25-75 Hz, and 5-15 volts, with a stimulus train duration of 10-30 msec.

19. A method for increasing cerebral blood flow in a patient, comprising the steps of:
providing an elongate member having a proximal end, a distal end, and an electrical stimulating device mounted on the distal end of the elongate member;

inserting the elongate member between lumbar vertebrae, low cervical vertebrae, or high thoracic vertebrae into the subarachnoid space;

advancing the electrical stimulating device cephalad and positioning the electrical stimulating device adjacent the brain stem; and

operating the electrical stimulating device to stimulate or inhibit nerve impulses of the brain stem, thereby producing vasodilation in the cerebral vasculature, thereby increasing cerebral blood flow.

20. The method of claim 19, further comprising the steps of measuring cerebral blood flow before and after the step of operating the electrical stimulating device.

21. The method of claim 20, further comprising the step of determining the increase in cerebral blood flow produced by operating the electrical stimulating device.

5 22. The method of claim 19, wherein the electrical stimulating device is positioned at a region adjacent the medulla.

23. The method of claim 19, wherein the electrical stimulating device is a GRASS stimulator.

10 24. The method of claim 19, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a rectangular square pulse.

25. The method of claim 19, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a pulse of 1 msec duration, 50 Hz, and 10 volts, with a stimulus train duration of 20 msec.

15 26. The method of claim 19, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a pulse of 0.1-3 msec duration, 25-75 Hz, and 5-15 volts, with a stimulus train duration of 10-30 msec.

27. A method for increasing cerebral blood flow in a patient, comprising the steps of:
providing an elongate member having a proximal end, a distal end, and an
electrical stimulating device mounted on the distal end of the elongate member;

inserting the elongate member between lumbar vertebrae, low cervical vertebrae,
5 or high thoracic vertebrae into the subarachnoid space;

advancing the electrical stimulating device cephalad and positioning the electrical
stimulating device adjacent the cervical sympathetic chain; and

operating the electrical stimulating device to stimulate or inhibit nerve impulses
of the cervical sympathetic chain, thereby producing vasodilation in the cerebral vasculature,

10 thereby increasing cerebral blood flow.

28. The method of claim 27, further comprising the steps of measuring cerebral blood
flow before and after the step of operating the electrical stimulating device.

29. The method of claim 28, further comprising the step of determining the increase
in cerebral blood flow produced by operating the electrical stimulating device.

15 30. The method of claim 27, wherein the electrical stimulating device is positioned at
a region adjacent the superior cervical ganglion.

31. The method of claim 27, wherein the electrical stimulating device is positioned at
a region adjacent the stellate ganglion.

32. The method of claim 27, wherein the electrical stimulating device is a GRASS
20 stimulator.

33. The method of claim 27, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a rectangular square pulse.

34. The method of claim 27, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a pulse of 1 msec duration, 50 Hz, and 10 volts, with a stimulus train duration of 20 msec.

35. The method of claim 27, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a pulse of 0.1-3 msec duration, 25-75 Hz, and 5-15 volts, with a stimulus train duration of 10-30 msec.

36. A method for increasing cerebral blood flow in a patient, comprising the steps of:
measuring a baseline cerebral blood flow;
performing transcutaneous electrical stimulation on the patient by applying an electrical stimulating device to the head of the patient, thereby producing vasodilation in the cerebral vasculature, thereby increasing cerebral blood flow;
measuring a second cerebral blood flow; and
comparing the measured second cerebral blood flow to the measured baseline cerebral blood flow to determine the increase in cerebral blood flow produced by electrical stimulation.

37. The method of claim 36, wherein the electrical stimulating device is positioned on the temples.

38. The method of claim 36, wherein the electrical stimulation comprises electroconvulsive therapy.

39. The method of claim 36, wherein the electrical stimulating device is a GRASS stimulator.

40. The method of claim 36, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a rectangular square pulse.

41. The method of claim 36, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a pulse of 1 msec duration, 50 Hz, and 10 volts, with a stimulus train duration of 20 msec.

42. The method of claim 36, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a pulse of 0.1-3 msec duration, 25-75 Hz, and 5-15 volts, with a stimulus train duration of 10-30 msec.

43. A method for increasing cerebral blood flow in a patient, comprising the steps of:
providing an electrical stimulating device;
applying the electrical stimulating device to the sympathetic nervous system; and
operating the electrical stimulating device to inhibit nerve impulses of the sympathetic nervous system, thereby producing vasodilation in the cerebral vasculature, thereby increasing cerebral blood flow.

44. The method of claim 43, wherein the step of applying the electrical stimulating device to the sympathetic nervous system comprises applying the electrical stimulating device to a nerve selected from the group consisting of the cervical sympathetic chain, the stellate ganglion, the superior cervical ganglion, and the vagal nerve.

45. The method of claim 43, wherein the step of applying the electrical stimulating device comprises applying the device by at least one method selected from the group consisting of transcutaneous, subcutaneous, epidural, subdural, or subarachnoid application.

46. The method of claim 43, further comprising the steps of measuring cerebral blood flow before and after the step of operating the electrical stimulating device.

47. The method of claim 46, further comprising the step of determining the increase in cerebral blood flow produced by operating the electrical stimulating device.

48. The method of claim 43, wherein the electrical stimulating device is applied to the transverse process of C6.

49. The method of claim 43, wherein the electrical stimulating device is applied to the skin of the patient at a region 2 cm to the right of spinous processes of vertebral bodies C5-6.

50. The method of claim 43, wherein the electrical stimulating device is a GRASS stimulator.

51. The method of claim 43, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a rectangular square pulse.

52. The method of claim 43, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a pulse of 1 msec duration, 50 Hz, and 10 volts, with a stimulus train duration of 20 msec.

53. The method of claim 43, wherein the electrical stimulating device is operated to produce electrical stimulation comprising a pulse of 0.1-3 msec duration, 25-75 Hz, and 5-15 volts, with a stimulus train duration of 10-30 msec.